

**In the Claims:**

1. (Previously Presented) A method of continuously etching a multi-layer film, comprising the steps of:

storing a target etch depth for each layer of a plurality of layers of said multi-layer film;

determining the value of a selected optical characteristic for an initial layer of said plurality of layers;

etching a layer of said plurality of layers according to selected etching parameters, said etching of each layer further comprising;

(a) determining a plurality of values for said selected optical characteristic associated with each one of said plurality of layers-undergoing said etching,

(b) calculating in real time the dynamic etch progressions based on said plurality of values associated with said layer undergoing said etching,

(c) determining if one of said dynamic etch progressions is the same as said target etch depth for said layer undergoing said etching, and

(d) repeating steps (b) and (c) until said target etch depth and said dynamic etch progressions are the same;

determining the value of a selected optical characteristic for another layer of said plurality of layers; and

repeating said etching step for said another layer.

2. (Previously Presented) The method as recited in Claim 1 further comprising comparing said optical characteristics during the etching of a selected layer to detect differences therein and dynamically adjusting said etching parameters according to said differences.

3. (Previously Presented) The method as recited in Claim 1 wherein at least two of said plurality of said optical characteristics of at least two of said layers are substantially similar.

4. (Previously Presented) The method as recited in Claim 1 further comprising determining a plurality of refractive indices, one each associated with one of said plurality of layers, and wherein said dynamic etch progressions for each layer of said plurality of layers is based on one of said plurality of refractive indices that is associated with said particular one layer of said plurality of layers undergoing said etching.

5. (Previously Presented) The method as recited in Claim 1 wherein said step of calculating dynamic etch progressions is further based on an elapsed etch time.

6. (Cancel)

7. (Original) The method as recited in Claim 1 wherein said plurality of layers includes at least three layers.

8. (Original) The method as recited in Claim 1 wherein at least one of said plurality of layers comprises one selected from the group consisting of:

fluorosilicate glass;

undoped silicon glass;

phosphosilicate glass; and  
silicon nitride.

9. (Previously Presented) The method as recited in Claim 1 wherein said step of determining a plurality of values for said selected optical characteristic includes collecting interference signals reflected from said particular one of said plurality of layers undergoing said etching.

10. (Previously Presented) The method as recited in Claim 9 wherein said step of determining a plurality of values for said selected optical characteristic includes analyzing said interference signals to determine a frequency of said associated one of said plurality of layers.

11. (Original) The method as recited in Claim 10 wherein said analyzing includes performing a Fast Fourier Transform.

12. (Original) The method as recited in Claim 1 wherein said etching removes portions of said plurality of layers.

13.-26. (Cancel)